同济大学课程考核试卷（A卷）

2022 — 2023 学年第 一 学期

命题教师签名： 审核教师签名：

课名：计算机科学导论 考试考查：考试

此卷选为：期中考试( )、期终考试( √ )、重考( )试卷

得分

## 注：所有的回答请用英文，填写在题目对应Answer处。

### General Format Questions (1-12)

1. The following table is from Appendix C of the textbook for the following questions. (8 points)

Op- code Operand Description

1 RXY LOAD the register R with the bit pattern found in the memory cell whose address is XY. 2 RXY LOAD the register R with the bit pattern XY.

3 RXY STORE the bit pattern found in register R in the memory cell whose address is XY.

4 0RS COPY the bit pattern found in register R to register S.

Encode each of the following commands in terms of the machine language described in the language description table.

A. \_\_\_\_\_\_\_\_\_ LOAD register 7 with the value A5.

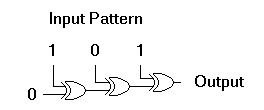
B. \_\_\_\_\_\_\_\_\_ LOAD register 7 with the contents of the memory cell at address A5.

C. \_\_\_\_\_\_\_\_\_ places 00000000 in register A

Decode each of the following instructions that were encoded using the language description table.

D. 4034 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

2.a. What is the output of the circuit below? (1 point)



b. Translate each of the following binary representations into its equivalent base ten representation. (2points)

1) 1100\_\_\_\_\_\_\_ 2) 10.011\_\_\_\_\_\_\_\_\_\_

c. Rewrite each of the following values (represented in base ten notation) in binary notation. (2points)

3) 23\_\_\_\_\_\_\_\_\_\_ 4） \_\_\_\_\_\_\_\_\_\_

d. Based on the 8-bit representation, write the two’s complement representation of 5 and -5. (2points)

3. What conditions are necessary for deadlock to occur? (9 points)

4. Fill in the blanks below with the part on the operating system (file manager, memory manager, device drivers, window manager, scheduler, dispatcher) that performs the activity described. (10 points)

A. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Executes each time a time slice terminates

B. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Creates virtual memory

C. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Places new entries in the process table

D. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Performs the actual communication with I/O units

E. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Protects files from unauthorized access

5. Describe and explain each step of a machine cycle for an instruction execution. Which layer of the four-layer network model actually transmits a message? (8 points)

6. Describe the respective functions of repeater, bridge, hub, switch and router. (10 points)

7.What are two protocols for implementing the transport level in the four-layer network model (6 points)

A. \_\_\_\_\_\_\_\_\_\_\_\_\_ B. \_\_\_\_\_\_\_\_\_\_\_

Which one is a reliable protocol in that the origin and destination work together to confirm that the entire message was successfully transferred.

C. \_\_\_\_\_\_\_\_\_\_\_\_\_\_

8. Please describe the difference between a process, an algorithm, a program, a programming language and a pseudocode. (10 points)

9. Explain the distinction between the imperative, declarative and functional programming paradigms. Why a high-level programming language is machine independent? (8 points)

10. What are formal and actual parameters? When a function passes parameters, what is the difference between the call-by-reference and call-by-value modes? (8 points)

11. Explain the distinction between translating a program (in a high-level language) and interpreting the program. What are the main 3 activities in the process of translating a program? Please describe their roles briefly. (8 points)

12.What are the differences between list, stack, queue and tree? (8 points)